

國立臺北科技大學

九十五學年度電機工程系碩士班碩士在職專班入學考試

戊組：計算機概論(含專業實務) 試題

填准考證號碼

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注意事項：

1. 本試題共【八】題，配分共 100 分。
2. 請按順序標明題號作答，不必抄題。
3. 全部答案均須答在試卷答案欄內，否則不予計分。

1. Multiple Choice Questions: (30 %)

- (1) Which of the following is a task that is not performed by the kernel of an operating system?
 - A. Communicate with the user
 - B. Schedule processes
 - C. Allocate resources
 - D. Avoid deadlock
- (2) Which of the following would be a concern of the file manager in a multi-user computer system that would not be a concern in a single-user system?
 - A. Maintain records regarding the location of files
 - B. Maintain records regarding the ownership of files
 - C. Maintain records regarding the size of files
 - D. None of the above
- (3) If the network identifier of a domain in the Internet is 115.48, how many unique IP addresses are available for identifying machines within the domain?
 - A. 4096
 - B. 16,384
 - C. 32,768
 - D. 65,536
- (4) The binary search algorithm is an example of an algorithm in which of the following classes?
 - A. $\Theta(\lg n)$
 - B. $\Theta(n)$
 - C. $\Theta(n \lg n)$
 - D. $\Theta(n^2)$

- (5) Which of the following is not a step in the process of translating a program?
- A. Lexical analysis B. Parsing the program
C. Executing the program D. Code generation
- (6) Copyright laws were established
- A. to allow authors to distribute their work while maintaining certain ownership rights.
B. to allow authors to maintain ownership of their ideas.
C. to restrict access to publications to certain groups within society.
D. to allow ideas to be traced back to their origins.
- (7) Suppose you were going to retrieve items of data that you would later need to process in the opposite order from that in which they were retrieved. Which of the following would be the best structure in which to store the items?
- A. Traditional linked list B. Stack C. Queue D. Tree
- (8) Which of the following statements is false?
- A. If a problem can be solved by a Bare Bones program, then it can be solved by a Turing machine.
B. If a problem can be solved by a Turing machine, then it can be solved by a Bare Bones program.
C. The halting problem cannot be solved by a Bare Bones program.
D. The halting problem can be solved only by using a universal programming language.
- (9) What value is represented by the bit pattern 01011100 when interpreted using floating-point format in which the most significant bit is the sign bit, the next three bits represent the exponent field in excess notation, and the last four bits represent the mantissa?
- A. $-1 \frac{1}{2}$ B. $1 \frac{1}{2}$ C. $-\frac{3}{8}$ D. $\frac{3}{8}$
- (10) Which of the following is not contained in a CPU?
- A. Instruction register B. Program counter
C. General-purpose register D. Memory cell
2. (10%) What is the difference between a conditional jump instruction and an unconditional jump instruction?
3. (10%) Describe the bootstrap process.

4. (10%) What is the difference between a bridge and a router?

5. (10%) What are some distinctions between UDP and TCP?

6. (10%) What sequence of numbers would be printed if the procedure named xxx as described below were executed with the value of N being 2?

```
procedure xxx (N)
  print the value of N;
  if (N < 3)
    then (apply procedure yyy to the value 4);
  print the value of N
```

```
procedure yyy (N)
  print the value of N;
  apply the procedure xxx to the value 5;
  print the value of N
```

7. (10%) Define each of the following:

A. Primitive data type B. User-defined data type C. Abstract data type

8. (10%) Suppose the abstract data type StackType was defined as follows:

```
define type StackType to be
{int StackEntries[20];
 int StackPointer = 0;
 procedure push(Value)
 {StackEntries[StackPointer] ← Value;
  StackPointer ← StackPointer + 1;
 }
}
```

A. What would be the value of the variable StackPointer associated with Stack2 after executing the statements

```
StackType Stack1, Stack2;
Stack1.push(5);
Stack2.push(6);
Stack2.push(7);
```

B. What would be the value of StackEntries[0] associated with Stack1 after executing the statements in part A?

C. What would be the value of StackEntries[0] associated with Stack2 after executing the statements in part A?